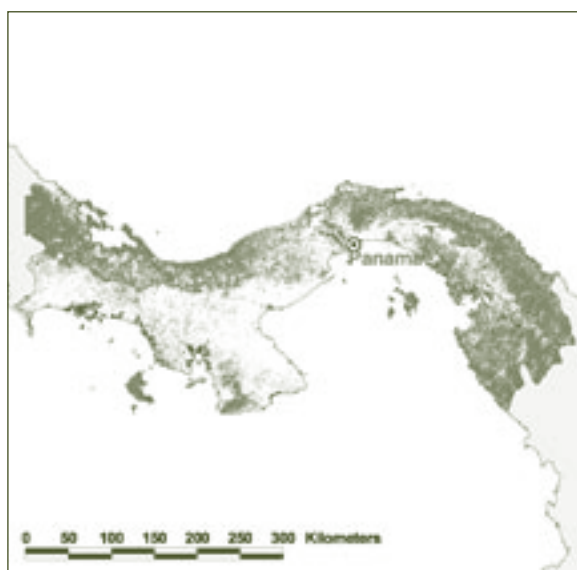


# PANAMA



\*For legend see page 58

## Forest resources

Panama has a land area of 7.56 million hectares and a population of about 3 million people. It can be divided into four biogeographical zones: (i) the Cordillera de Talamanca, which extends southwards from Costa Rica in the west, with peaks of more than 3,000 m; (ii) the central lowlands, bisected by the Panama Canal; (iii) the largely forested eastern region, characterized by a series of lower mountain ranges (San Blas and Portobello ranges) of up to 1,000 m and hilly landscapes up to 800 m (Darien); and (iv) the lowlands on the Caribbean coast. Nearly 90% of the country lies below 1,000 m. Estimates of forest cover include 2.88 million hectares (FAO 2005), 3.01 million hectares<sup>b</sup>, 3.3 million hectares (ANAM 2003), and 3.48 million hectares<sup>a</sup>. About 2.6 million hectares are degraded primary forests and secondary forests (*rastrojos*), of which about

1.1 million hectares can be considered young secondary forests that are partly used for shifting agriculture (ANAM 2003).

**Forest types.** The prevalent forest type in Panama is semi-deciduous tropical moist forest, together with lowland, sub-montane and montane evergreen forests. Mangrove forests can be found on the Pacific coast. Tropical moist forests are typical of the low-lying and medium-altitude parts of Darien, where they cover a considerable area. These stands are heterogeneous but always dominated by *Cavallinesia platanifolia*, sometimes in combination with *Anacardium excelsum* in the dominant storey, and average 22–25 m or more in height. The lower storey contains various species of palms. Other forest types in the country characterized by the dominance of a few species are:

- *Quercus* (oak) forests, which are found in the Talamanca Mountains. These are sometimes fully closed, with a dominant storey of two species of oak and a few other species;
- *cativo* (*Prioria copaifera*) forests, which are found alongside mixed forest stands, always in the proximity of rivers on inundated areas; and
- *Campnosperma panamensis* forests, which occur on poorly drained ground in the western Atlantic coastal region.

**Dynamics of forest resource change.** An estimated 47,000 hectares of forest were lost annually between 1992 and 2000 (ANAM 2003), a rate of 1.3% per year. The highest rate of deforestation was in *Comarca* Ngobe Bugle in the northwest of the country, with 10,000 hectares per year (2.7%), and in the Province of Darien, with 17,000 hectares per year (1.7%). Deforestation is

Table 1 PFE

Estimated total forest area, range (million hectares)	Total closed natural forest ('000 hectares) Source: FAO 2001	PFE ('000 hectares)			
		Production		Protection	Total
		Natural	Planted		
2.88–3.48	3,052	350 <sup>b</sup>	56 <sup>a,b</sup>	1,580 <sup>b</sup>	1,986

caused by urbanization, cattle ranching and agro-industrial development, but also by unregulated shifting cultivation (*rozras*) and, in already degraded forest areas, by poor logging practices<sup>c</sup>.

**Permanent forest estate.** According to existing land-use plans, 75% (5.6 million hectares) of the land is suitable for forest use and only 20% has good agricultural potential. The forest law of 1994 (*Ley 1/94*) classifies forest into production, protection and special areas; these latter include scientific, historic, educational, tourist and recreational areas. Of the present forested area, 350,000 hectares are set aside for production, although this has not yet been mapped or demarcated on the ground<sup>b,c</sup>. About 140,000 hectares in the provinces of Colón, Bocas del Toro and Veraguas have not yet been harvested and may be considered potential production forest. The National Environmental Authority (*Autoridad Nacional del Ambiente – ANAM*) (2003) estimated the area of protection forests to be 1.18 million hectares, comprising 1.08 million hectares of forested areas in national parks<sup>b</sup> and 96,000 hectares of forest reserves. The total area of protection PFE is an estimated 1.58 million hectares<sup>b</sup>. Nearly 1 million hectares have not yet been allocated; many of these areas, however, are classified under a protected-area category<sup>b</sup>.

**Planted forests.** In 2004, there were about 56,000 hectares<sup>a,b</sup> of planted forest, most of them privately owned<sup>c</sup>. About 1.2 million hectares of land are available for plantation development<sup>a</sup>.

## Institutional arrangements

**Forest tenure.** Forests are divided into public, private and *comarcas*, or indigenous reserves, but the majority of the forest estate is state-owned. Regarding indigenous forest lands, the 1972 constitution recognizes the collective landholding units known as *comarcas* and gives them authority to manage their lands according to customary law. Most of the closed forest area is situated within the *comarcas* (*Comarca de Emberá-Wounaan*, *Comarca Kuna de Wargandi*, *Comarca Kuna Yala* and *Comarca de Madungandi*). The *comarcas* comprise 28% of the national territory (2.2 million hectares); large parts are forested.

**SFM policy framework.** The forest law (*Ley 1/94*) provides a framework for SFM (articles 26, 28 and

44). The ITTO C&I are used to monitor progress towards SFM. No integrated planning for land-use has been applied, nor is there any clear demarcation of a PFE. Boundaries have been delimited and management plans prepared for some protected areas.

**Forest policy and legislation.** A number of legislative changes during the 1990s affected forestry. Law 1/94 of 1994, which replaced Law 39 of 1966, was designed to conserve and manage forest resources sustainably. Law 1/94 also established a National Fund for Forest Development and Protection (*Fondo de Protección y Desarrollo Forestal – FONDEFOR*) to assist in forest promotion, protection management, supervision, control and research, and forestry extension. The fund, however, is not yet functioning, and all forest-related taxes go to general revenue. Article 43 of Law 1/94 states that all private forest land covered by forests, either natural or artificial, is exempt from national taxes, provided that the landowner is registered in the *Registro Forestal* and a certificate of ownership has been issued.

The most important recent change, however, was the introduction in 1998 of the general environmental law (*Ley 41/98*), which established principles and norms for the protection, conservation and restoration of the environment, and for promoting the sustainable use of natural resources. Under this new legislation, land capability planning has started to provide a basis for environmental management. The law also recognizes the rights of indigenous communities to manage forests in the *comarcas* (Article 44). More recently, Decree Law No 2 of January 2003 approved a set of forest management guidelines for Panama.

**Institutions involved in forests.** Law 41/98 established ANAM, in charge of the overall supervision and control of forestry. There are 200 forest professionals in Panama, of which approximately 40 work for ANAM (ANAM 2004).

Various national and international NGOs are active in forest management and conservation. These include the National Association for the Conservation of Nature (*Asociación Nacional para la Conservación de la Naturaleza – ANCON*) and other associations such as Fundación NATURA and the National Parks and Environment Foundation (Fundación Parques Nacionales y Medio Ambiente – PA.NA.M.A.).

**Table 2 Some commonly harvested species for industrial roundwood (2001-2003)<sup>c</sup>**

Timber species	Remarks
<i>Bombacopsis quinata</i> (cedro espino)	Important timber species that has maintained its value over many years
<i>Anacardium excelsum</i> (espavé)	Important timber species over the past ten years
<i>Miroxylum balsamum</i> (bálsamo)	Major timber species in the national market
<i>Prioria copaifera</i> (cativo)	Losing its value because of competition from cheap plywood imports
<i>Tectona grandis</i> (teak, teca)	From plantations, increasingly important in the national timber market

## Status of forest management

### Forest for production

The framework for natural forest management is set by Law 1/94 and its regulation 5/98. Forest management in natural forests is carried out by way of various types of timber-cutting licences, including logging permits on private lands, special permits for subsistence (granted to individuals for cutting a small number of trees for personal use), five-year forest concessions for 1,000–5,000 hectares and for areas larger than 5,000 hectares, logging permits and forest concessions for indigenous communities in the *comarcas*, and logging permits for community forest plantations. Between 1991 and 1999, 29 forest concessions were granted over 67,150 hectares, but forest concession licences have been suspended since 2002. Seventeen permits (over 3,400 hectares) have been granted on private farms and 66 permits for communities over 15,000 hectares. Six community permits were in operation in September 2004, while ANAM granted approximately 5,200 subsistence permits in 2004<sup>b</sup>. Logging under existing community permits is selective, generally done without regard to forest management guidelines, and is very detrimental to the remaining forest<sup>b</sup>. Moreover, indigenous communities have been known to sell their rights to such permits to private companies for meagre prices. Management is occurring in some privately owned plantations and national parks, and in privately owned tracts of forests located mostly in eastern Panama. Law 1/93 stipulates that the granting of licences for new concessions is conditional on integrated forest

management plans for SFM and independent monitoring of implementation, but few such plans have been prepared. Forests are being high-graded through cutting permits, without regard to long-term sustainability<sup>c</sup>. Logged-over forests are generally degraded.

**Silviculture and species selection.** No formal silvicultural systems are applied in the natural forests. The total number of tree species harvested and marketed to a significant extent is between twelve and 15; the most commonly harvested are shown in Table 2, but new species are now being considered in the market, including *Miroxylon balsamum* (bálsamo), *Platymiscium pinnatum* (quira), *Hieronyma alchorneoides* (zapatero), *Puteria* spp (platano), *Gyranthera darinensis* (cucharo) and *Astronium graveolens* (zorro). Those most harvested previously included *Carapa guianensis* (tangare), *Cedrela odorata* (cedro amargo), *Tabebuia rosea* (oak), *Calophyllum brasiliense* (maria), *Copaifera aromatica* (cabimo), *Dalbergia retusa* (cocobolo), *Ocotea* spp (bambito) and *Swietenia macrophylla* (caoba).

**Planted forest and trees outside the forest.** Of the estimated 56,000 hectares of plantations in 2003, 44,000 hectares have been established since 1992<sup>b</sup>, the majority by private and community landowners. While the main plantation species before 1990 was *Pinus caribaea* (pino caribe) at 7,000 hectares, after 1995 *Tectona grandis* (teak, teca) became the major species, with nearly 28,000 hectares of new plantations. Teak and pino caribe account for about 80% of the planted area. Other species planted are valuable hardwoods such as *Cordia alliodora* (laurel), *Bombacopsis quinata*

**Table 3 Management of the production PFE ('000 hectares)**

Total	Natural				Planted		
	Allocated to concessions/ under licence	With management plans	Certified	Sustainably managed	Total	With management plans	Certified
350	86	63	0	0	56	32	12.2

(cedro espino), *Terminalia amazonia* (amarillo), caoba, *Hieronyma alchorneoides* and *Dipteryx panamensis* (almendro).

**Forest certification.** As of December 2005, six plantations with a total area of 12,240 hectares had been certified under the FSC umbrella (FSC 2005). ANAM supports the development of voluntary certification through technical workshops, which have been held with NGOs and the private sector.

**Estimate of the area of forest sustainably managed for production.** The total area of forest covered by management plans is about 63,000 hectares. Few if any of the existing concessions are thought to manage their forests sustainably<sup>c</sup>. More than 1,000 small landowners manage about 32,000 hectares of planted forest.

**Timber production and trade.** Total roundwood production was an estimated 1.2 million m<sup>3</sup> in 2000 (ANAM 2004), 95% of which was for fuelwood and charcoal. Official industrial log production was about 100,000 m<sup>3</sup> in 2003, up from 48,000 m<sup>3</sup> in 1999 (ITTO 2004, 2005); an estimated 50,000 m<sup>3</sup> of logs are entering the local market from illegal sources<sup>c</sup>. Sawmwood production in 2003 was about 27,000 m<sup>3</sup> (ITTO 2005). The total installed sawmill capacity is approximately 200,000 m<sup>3</sup> (ANAM 2004), which is double current official industrial log production. The primary-processing industry is very small, uses antiquated equipment and is located mainly in the periphery of Panama City; it is in such a poor state that it faces extinction within five years<sup>b</sup>.

**Non-wood forest products.** Numerous wildlife species provide important sources of protein in indigenous territories, including tapir, *Agouti paca* (conejo pintado), and other mammal species. Many plants are collected for medicinal purposes. The palm fruit *Phytelephas seemannii* (tagua) and such

fibres as *Astrocaryum* sp (chunga) and *Carludovica palmata* (the 'Panama-hat palm') are used for handicrafts, as is the wood of *Dalbergia retusa* (cocolobo). Poles and leaves of *Cryosophila guagara* (guagara) are used for local construction. Fruits and nuts from forest trees are collected for local use and sale, including *Borojoa patinoi* (borojó), a fruit with aphrodisiac properties.

### Forest for protection

**Soil and water.** Forests managed principally to protect soil and water cover about 326,000 hectares; most of these are situated in the watershed of the Panama Canal, which covers an area of 518,000 hectares<sup>b</sup>. They have the important function of protecting the Panama Canal from siltation and ensuring an adequate supply of water for the locks. The Ministry of Health has a program of forest restoration and reforestation in watersheds that serve as water sources for rural communities and municipalities.

**Biological diversity.** Panama is very biodiverse for its size. Estimates indicate over 10,000 species of vascular plants, 218 mammal species, 929 bird species, 226 reptiles and 164 amphibians (UNEP-WCMC website). Eighteen mammals, 20 birds, seven reptiles and 52 amphibians are listed as critically endangered, endangered or vulnerable on the IUCN red list of threatened species; of these, seven mammals, 18 birds, 52 amphibians and four plants are found in forests (IUCN 2004). Another estimate of endangered species of flora and fauna is 5,308 species<sup>b</sup>. Six plant species are listed in CITES Appendix I and 543 in Appendix II, including caoba and *Swietenia humilis* (CITES 2005).

**Extent of protected areas.** The newly created National System of Protected Areas has 50 protected areas divided into 13 categories with an area

**Table 4 Management of the protection PFE ('000 hectares)<sup>b,c</sup>**

Total	Attributed to IUCN categories I-IV	Allocated for soil and water	With management plans	Sustainably managed
1,580	1,040	326	396 <sup>d</sup>	180 <sup>c</sup>

of 2.45 million hectares<sup>b</sup> (32% of the national territory). However, encroachment and timber theft in the protection PFE are widespread<sup>c</sup>. Protected areas are distributed according to the following main management categories: 17 national parks with a total area of 1.3 million hectares, out of which 1.08 million hectares are forested; forest reserves; four wildlife refuges (32,000 hectares); protection forests; wetlands; natural monuments; natural areas; hydro protection zones; wild areas; biological corridors; and multiple-use areas<sup>a</sup>. The Darien National Park encompasses nearly 50% of the total forest protected area. Six protected areas out of 43 are interconnected. An estimated 1.04 million hectares of forest are contained within protected areas conforming to IUCN protected-area categories I-IV, including 741,000 hectares of lowland evergreen broadleaved rainforest (UNEP-WCMC 2004).

**Estimate of the area of forest sustainably managed for protection.** Insufficient information was made available for this report to enable an estimate to be made of the area being sustainably managed over the entire protection PFE. However, an estimated 722,000 hectares of such forests are covered by administrative instruments<sup>b</sup> and benefit from some form of management<sup>a</sup>. Simple management plans exist for several protected forest areas, but they are generally not implemented due to a lack of financial resources and personnel<sup>b</sup>. The core protected forest area in the watershed of the Panama Canal (about 180,000 hectares) is generally considered well managed<sup>c</sup> (Table 4).

### Socioeconomic aspects

**Economic aspects.** The contribution of the forest sector to GDP is very low (less than 1% in 2002<sup>a</sup>). However, it is an important economic factor locally, particularly for indigenous communities; the forest sector employs about 6,500 people, many of them rural poor<sup>a</sup>.

**Livelihood values.** Special consideration has been given to the *comarcas* where community forest concessions can contribute to the livelihood of local communities; such approaches have been tested through an ITTO project in the Kuna Yala communities on the Atlantic coast with limited success. Forests are generally considered a common good and there is little perception of their sustainable use on the part of stakeholders, including local communities, settlers invading forest areas from other regions and commercial logging operators.

### Summary

The management of Panama's PFE is problematic. Concessions have been suspended, and smaller-scale logging is being carried out with little oversight and without detailed management plans or silvicultural prescriptions. The timber industry is in a poor state, with antiquated equipment and an under-supply of legally produced timber. Large areas of forest are classified as protected areas; nevertheless, they are generally not managed or controlled effectively. Forest plantations are being developed, mainly on private properties. Forest management appears strongest in the watershed of the Panama Canal.

### Key points

- The PFE comprises an estimated 350,000 hectares of natural production forest and 1.58 million hectares of protection forest. A further 1.60 million hectares of forest have not yet been allocated.
- No production PFE is considered to be under sustainable management. The estimated area of protection PFE under SFM is estimated to be at least 180,000 hectares, comprising the core protection area of the Panama Canal.
- The forest law recognizes the rights of indigenous communities to manage forests in indigenous reserves (called *comarcas*).



- ANAM has insufficient human and financial resources to carry out the field-level monitoring and control of forestry operations necessary to ensure adherence to forest-related laws and regulations.
- The private sector and civil society have been minimally involved in the preparation of SFM policies and strategies.
- There is a lack of information on the silviculture of the country's natural forests and an apparent lack of research and training capacity.
- Most of the protected areas and protection forests are not well delimited and are threatened by encroachment.
- Illegal logging is widespread in the moist forest area, even in protected areas. This is a significant impediment to long-term SFM.

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